

White-tailed Deer Population Status 2002

By Robert E. Rolley

Abstract

The statewide posthunt white-tailed deer population estimate for 2002 was 913,000. This was 29% above the statewide goal of 707,300. With a harvest of over 156,000 adult bucks and 217,000 antlerless deer, the posthunt 2002 population was 7% lower than a year ago. The 2002 posthunt population was more than 20% above goal in 73 deer management units. The statewide 2002 posthunt population was the seventh highest on record.

Methods

Population estimates for most deer management units in the state were calculated using the Sex-Age-Kill (SAK) formula. This formula combines information on the age-composition of the buck harvest with an estimate of the percentage of adult buck mortality that is due to legal hunting (buck recovery rate) to estimate the percentage of the adult buck population that is harvested (buck harvest rate). The size of the prehunt adult buck population in each management unit is estimated by dividing the unit's registered buck harvest by the estimate of the buck harvest rate. The prehunt adult buck population estimate is then expanded to estimate the entire prehunt deer population by 1) multiplying the buck population estimate by the adult sex-ratio to estimate the size of the adult doe population, and 2) multiplying the doe population estimate by the fall fawn:doe ratio to estimate the fall fawn population. The posthunt deer population is estimated by subtracting the total harvest from the prehunt estimate.

Primary inputs to the SAK formula are 1) year- and unit-specific harvests of antlered and antlerless deer, 2) the average percentage of yearlings among harvested bucks, 3) the average percentage of yearlings among harvested does, 4) the buck recovery rate, and 5) fall fawn:doe ratios. The percentage of yearlings among harvested bucks is used as an estimate of the annual mortality rate of adult bucks. Multi-year averages are used for yearling buck and doe percents because annual variation in reproduction or fawn survival can affect annual estimates of the percentage of yearlings, thereby biasing estimates of adult buck mortality. In addition, year- and unit-specific samples of aged deer are often inadequate for reliable estimation of yearling percents.

Average yearling buck and doe percents and buck recovery rates were updated in 2002 for some units in the eastern and southern farmland regions. Fawn:doe ratios were updated in the Northern and Central forest regions based on the results of the Summer Deer Observation survey.

The November 2002 firearm season opened on the latest possible date. Hunter access was good because backroads and wetlands were frozen. Temperatures during the season were colder than normal and high winds occurred during the opening weekend and later in the week. Snow cover was lacking throughout the season in most of the state. Parts of the north received snow early in the week and again at the end of the season.

Hunting pressure appeared to be affected by the discovery of chronic wasting disease in southwestern Wisconsin earlier in the year. Sales of gun deer licenses were 10% lower than in 2001 and sales of archery licenses were reduced by 19%. Estimates of hunter pressure during

the opening weekend of the November gun season were 13% lower than in 2001. Consequently, the Deer Committee decided to lower the estimates of buck recovery rate for Northern Forest units by 5-11%. This had the effect of lowering the estimate of buck harvest rate by an average of 7% across the region and increasing the estimated prehunt population in the Northern Forest by 7%. Adjustments in buck recovery rates were not believed to be necessary in other regions because recorded buck harvests were less depressed than in the Northern Forest.

Unit population goals were reduced to 10 deer/mi² for units within the CWD Management Zone in southwestern Wisconsin. Five units were split in the creation of the CWD Management Zone. Population estimates for units in the CWD Management Zone were not based on the SAK method because buck harvest rates were likely below average due to public concerns related to hunting in an area potentially affected by CWD, as well as the earn-a-buck regulations that required the harvest of an antlerless deer before harvesting an adult buck. Therefore, posthunt 2002 population estimates were calculated by subtracting the registered harvest in the Management Zone units from the fall 2002 population predictions that were based on the posthunt 2001 estimates. In addition, accounting population models were developed for seven of the 15 Management Zone units where we had a series of previous SAK estimates with which to calibrate the accounting models.

Results

The reduction of density goals in the CWD Management Zone resulted in a 22% reduction of the Southern Farmland overwinter population goal to 124,530 and a 5% reduction in the statewide overwinter population goal to 707,300 (Table 1).

Estimates of posthunt deer population size during 2002 were made for 122 deer management units (Table 1). Statewide, the 2002 posthunt population estimate was 913,000, which was 29% above goal. The estimated statewide population was 7% lower than in 2001. The statewide 2002 posthunt population was seventh highest on record. Unit-specific posthunt population densities ranged from 8-59 deer/mi² of deer range and averaged 26 deer/mi².

In 2002, 3 units had population estimates that were more than 20% below goal. Nineteen units had populations that were 1-20% below goal. Twenty-six units had populations that were between goal and 20% above goal. Population estimates in 35 units were 21-50% above goal and 38 units had populations that are more than 50% above goal. Population estimates declined 20% or more from 2001 in 25 units and increased 20% or more in 9 units.

Deer populations in the Northern Forest, Eastern Farmland, and Western Farmland regions increased substantially during the 1980's (Figure 1). Aggressive harvests during the late 1980's and early 1990's, combined with very poor recruitment in the Northern and Central Forest regions in 1992, reduced populations to near goal in the North and below goal in the Central Forest. Deer populations in all regions grew rapidly following the conservative harvests in 1993 reaching an all time record posthunt population in excess of 1,120,000 in 1995. Liberal harvests in the farmland regions together with over-winter losses associated with the severe winters of 1995-96 and 1996-97 reduced populations from the 1995 peak in all regions. The near-record mild winter of 1997-98 and relatively conservative antlerless harvests in 1998 allowed population growth in all regions. Substantial antlerless harvests across much of the state in 2000, together with the moderately severe winter of 2000-01 in the Northern Forest, set the stage for population declines in all regions in 2001. Moderate population declines continued in

the Northern Forest and Western Farmland regions in 2002 but reduced harvests in 2002 lessened population declines in the Eastern and Southern farmland regions.

The posthunt population in the Northern Forest region decreased 16% from 2001 to 2002, but was still 18% above goal in 2002. The Central Forest population increased 16% between 2001 and 2002 and was 19% above goal in 2002. The Eastern Farmland population declined 3%, but was still 46% above goal. Populations in the Western Farmland decreased 6% while populations in the Southern Farmland only decreased 3%. The Western and Southern Farmland populations were 18% and 53% over goal, respectively.

Table 1. White-tailed deer population status in Wisconsin deer management units, 2001-2002

Table 11. White-tailed deer population status in Wisconsin deer management units, 2001-2002									
Region & Unit	Population goal		2001 posthunt population			2002 posthunt population			% change from 2001
	Num.	Den. ^a	Num.	Den. ^a	% over goal	Num.	Den. ^a	% over goal	
Northern Forest									
01	3,220	20	5,000	31	55	4,100	26	28	-17
01M	320	10	200	5	-53	240	8	-25	51
02	9,198	18	14,000	27	52	11,700	23	27	-15
03	6,660	12	14,600	26	119	11,100	20	66	-23
04	3,490	10	6,600	19	89	4,900	14	40	-26
05	4,520	20	8,000	36	78	7,700	34	70	-6
06	5,232	12	9,900	23	90	7,800	18	49	-22
07	2,835	15	3,200	17	12	2,200	11	-24	-33
08	7,400	20	9,900	27	33	6,200	17	-16	-38
09	8,760	20	13,700	31	57	9,300	21	6	-32
10	8,625	25	8,200	24	-5	8,700	25	1	5
11	6,820	20	9,400	27	37	6,100	18	-10	-33
12	4,488	17	8,500	32	89	5,600	21	24	-34
13	10,725	15	19,800	28	84	16,500	23	54	-17
14	4,592	14	8,100	25	77	6,500	20	41	-21
17	3,570	15	3,800	16	6	4,400	18	22	14
18	7,360	20	9,000	24	22	11,300	31	54	28
19	8,060	20	18,000	45	124	12,000	30	48	-34
20	6,804	18	9,500	25	39	8,700	23	28	-8
24	5,560	20	7,400	27	34	5,700	20	2	-24
25	8,740	20	9,700	22	11	10,600	24	21	10
26	7,820	20	6,200	16	-21	10,000	26	28	60
28	7,216	11	14,600	22	102	7,700	12	6	-47
29A	2,868	12	4,800	20	66	3,900	16	36	-18
29B	2,796	12	3,000	13	9	2,300	10	-17	-23
30	4,725	15	5,900	19	26	5,500	17	16	-8
31	8,280	20	9,500	23	15	8,900	21	7	-7
32	10,227	21	8,200	17	-20	9,900	20	-3	19
34	4,454	17	9,300	36	110	5,200	20	18	-44
35	8,180	20	16,700	41	104	11,000	27	34	-35
36	6,850	25	11,200	41	64	9,300	34	36	-17
37	5,875	25	7,200	31	23	6,800	29	15	-7
38	7,760	20	10,300	27	33	9,500	25	23	-9
39	8,220	20	10,400	25	26	7,200	17	-13	-30
40	6,560	20	4,400	13	-33	4,600	14	-31	7
41	4,875	25	5,400	28	11	5,700	29	18	5
42	6,540	20	8,400	26	28	8,200	25	26	-3
43	6,120	15	7,000	17	15	7,600	19	24	9
44	7,922	17	9,300	20	18	7,700	16	-3	-18
45	11,860	20	11,400	19	-3	9,500	16	-20	-16
49A	5,875	25	7,100	30	22	5,500	23	-6	-22
49B	4,550	25	6,600	37	46	5,300	29	17	-22
50	6,680	20	8,700	26	30	7,400	22	10	-15
52	6,080	20	7,600	25	26	8,300	27	37	10
78	440	20	1,000	44	119	800	35	75	-21
Regional									
total	279,752		391,000		40	329,000		18	-16

Region & Unit	Population goal		2001 posthunt population			2002 posthunt population			% change from 2001
	Num.	Den.	Num.	Den.	% over goal	Num.	Den.	% over goal	
Central Forest									
53	11,525	25	12,900	28	12	11,600	25	1	-10
54A	12,100	25	9,400	19	-22	15,100	31	24	64
55	15,775	25	19,000	30	20	18,900	30	20	0
56	10,050	30	11,400	34	14	12,800	38	28	13
58	12,650	25	11,700	23	-7	15,100	30	19	30
Regional total	62,100		64,000		3	74,000		19	16
Eastern Farmland									
27	4,960	20	8,300	33	67	5,000	20	0	-39
33	5,520	20	6,700	24	22	5,800	21	5	-12
46	8,025	25	10,000	31	25	10,500	33	31	5
47	6,725	25	10,900	40	62	8,900	33	33	-17
51A	5,500	25	9,600	44	75	8,700	39	57	-11
51B	9,725	25	14,400	37	48	12,100	31	24	-16
57	3,212	22	3,600	25	13	4,100	28	27	11
57A	5,950	25	6,800	29	15	7,100	30	20	3
57B	6,300	25	6,100	24	-3	7,000	28	11	15
57C	7,980	30	7,500	28	-6	6,800	25	-15	-9
62A	10,050	25	13,300	33	32	12,200	30	21	-8
62B	9,075	25	18,900	52	108	20,100	55	122	7
63A	8,475	25	14,400	42	70	16,500	49	95	16
63B	6,300	25	10,100	40	61	10,300	41	63	2
64	4,860	20	8,100	33	67	9,000	37	85	12
64M	810	10	3,100	38	283	2,900	36	260	-5
65A	5,160	30	5,700	33	10	6,100	36	19	8
65B	10,410	30	14,000	40	34	13,200	38	26	-5
66	4,300	25	10,300	60	139	10,100	59	135	-2
80A	2,280	15	4,500	29	96	4,000	26	73	-10
80B	3,880	20	7,300	38	89	8,000	41	105	8
81	270	15	800	46	204	760	42	181	-8
Regional total	129,767		194,000		49	189,000		46	-3
Western Farmland									
15	10,350	25	11,600	28	12	9,900	24	-5	-15
16	8,375	25	8,500	25	1	7,600	23	-9	-9
21	5,625	25	7,600	34	34	5,500	24	-2	-28
22	6,980	20	8,600	25	24	6,700	19	-5	-24
22A	7,060	20	8,800	25	24	7,500	21	6	-15
23	8,060	20	10,100	25	26	10,400	26	29	3
59A	10,400	20	11,100	21	7	10,600	20	2	-3
59B	10,305	15	10,800	16	5	11,800	17	15	7
59C	15,650	25	20,800	33	33	19,200	31	23	-7
59D	7,680	20	10,600	28	38	11,000	29	43	2
59M	440	10	900	21	113	800	19	90	-10
60A	3,400	20	3,600	21	6	3,000	18	-11	-15
60B	1,660	20	2,000	25	23	1,700	21	5	-16
60M	800	10	1,500	19	89	1,600	20	97	4
61	14,370	15	23,900	25	67	23,200	24	61	-3
Regional total	111,155		140,000		26	131,000		18	-6

Region & Unit	Population goal		2001 posthunt population			2002 posthunt population			% change
	Num.	Den.	Num.	Den.	% over	Num.	Den.	% over	from 2001
					goal			goal	
Southern Farmland									
54B ^b	4,650	25	10,200	26	5	5,100	27	10	
54BCWD ^c	2,030	10				4,800	24	137	
54C	2,375	25	3,200	34	36	3,000	32	27	-7
67A	10,620	30	15,800	45	48	16,900	48	59	6
67B	5,640	30	10,500	56	86	10,900	58	94	4
68A	3,900	30	7,000	54	80	7,200	56	86	3
68B	5,490	30	4,500	25	-18	4,800	26	-12	6
69	9,775	25	8,900	23	-9	8,900	23	-9	-1
70CWD ^c	2,420	10	8,600	32	27 ^d	7,400	30	204	-5
70ACWD ^c	2,190	10	7,600	35	40 ^d	8,200	38	276	7
70BCWD ^c	2,120	10	5,200	25	-18 ^d	5,300	25	152	1
70ECWD ^c	690	10	3,000	43	43 ^d	2,700	39	287	-10
70G ^b	2,070	30	4,000	33	10 ^d	3,500	51	71	
70GCWD ^c	530	10				1,500	27	174	
71 ^b	7,325	25	17,400	28	11	7,200	25	-2	
71CWD ^c	3,330	10				9,500	28	184	
72	10,080	20	15,100	30	50	13,700	27	35	-10
73B ^b	3,700	20	5,900	25	24	4,900	27	33	
73BCWD ^c	540	10				1,000	19	91	
73D	3,160	20	3,100	20	-1	2,800	17	-13	-13
73ECWD ^c	2,770	10	7,200	26	18 ^d	6,800	24	145	-6
74A	3,000	15	5,200	26	73	3,800	19	26	-27
74B	8,640	20	7,700	18	-11	7,500	17	-13	-3
75ACWD ^c	2,240	10	6,600	27	37 ^d	5,800	26	160	-4
75CCWD ^c	510	10	3,700	30	49 ^d	1,200	23	133	-22
75DCWD ^c	1,120	10	3,300	30	49 ^d	3,100	27	174	-9
76CWD ^c	1,590	10	4,900	22	9 ^d	2,600	16	62	-26
76A	7,625	25	7,800	26	3	8,500	28	12	8
76MCWD ^c	530	10	1,500	20	97 ^d	1,300	24	144	22
77A ^b	2,020	20	3,700	30	49	3,000	30	50	
77ACWD ^c	220	10				500	21	109	
77B	3,240	15	3,000	14	-8	3,700	17	13	21
77C	4,830	15	6,200	19	29	8,300	26	72	36
77M	3,120	10	4,700	15	49	4,600	15	46	-2
Regional total	124,530		195,500		23	190,000		53	-3
Total	707,304		984,500		33	913,000		29	-7

^a Deer/mi² of deer range.

^b Unit was split to create the CWD Management Zone.

^c Population goal was reduced in 2002 to 10 deer/mi² for units in CWD Management Zone.

^d Based on previous density goal.

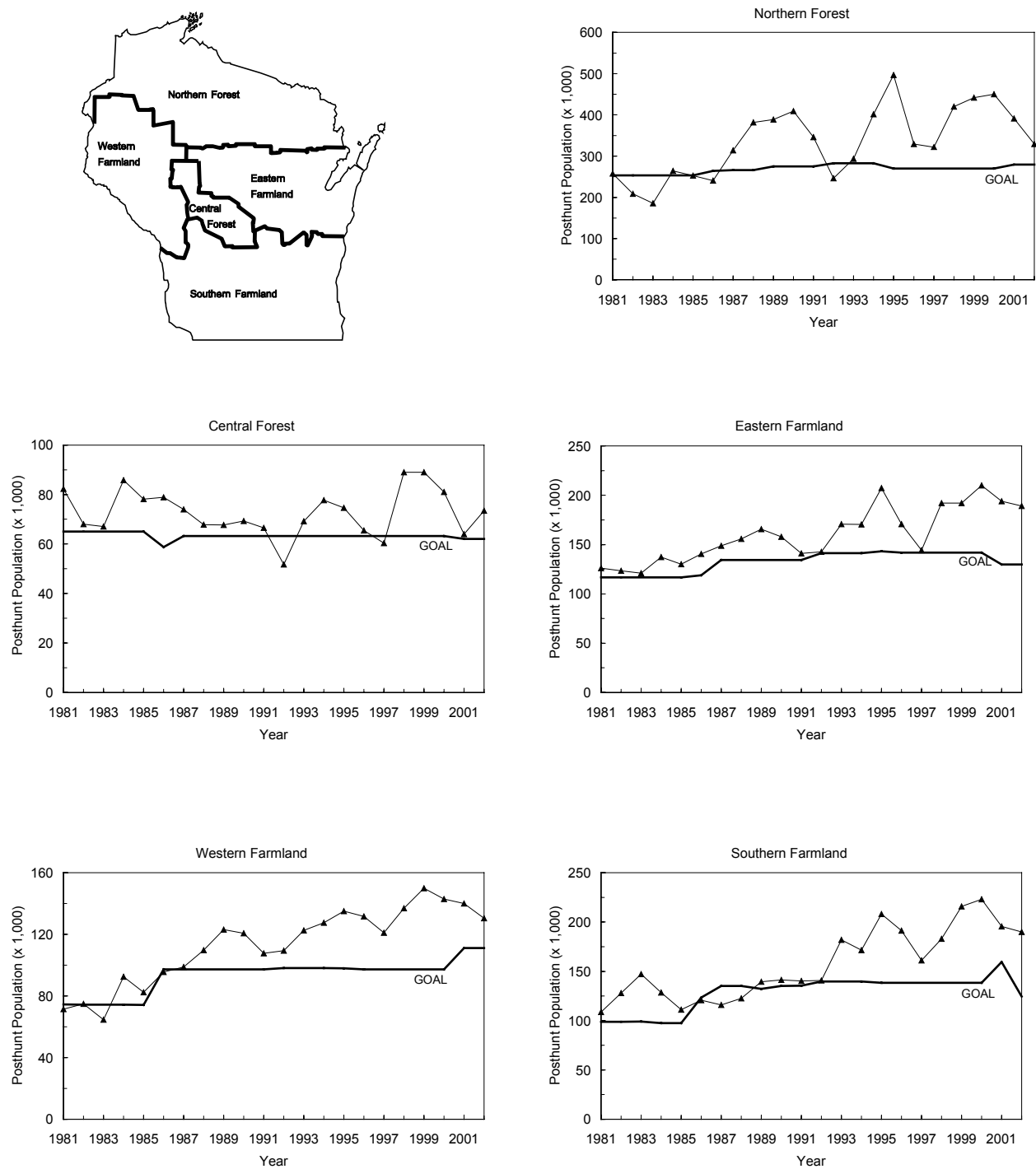


Figure 1. *Regional white-tailed deer population trends in Wisconsin, 1981-2002.*